

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A process for producing metal oxide from metal compounds, in particular metal hydroxide or metal carbonate, in which the metal compound is conveyed into a reactor (25) with fluidized bed, heated there to a temperature of 650 to 1150°C by combustion of fuel, and metal oxide is generated, ~~characterized in that~~ wherein a first gas or gas mixture is introduced from below through a gas supply tube (26) into a mixing chamber (20) of the reactor (25), the gas supply tube (26) being at least partly surrounded by a stationary annular fluidized bed (27) which is fluidized by supplying fluidizing gas, and that the gas velocities of the first gas or gas mixture as well as of the fluidizing gas for the annular fluidized bed (27) are adjusted such that the Particle-Froude numbers in the gas supply tube (26) lie between 1 and 100, in the annular fluidized bed (27) between 0.02 and 2, and in the mixing chamber (20) between 0.3 and 30.

2. (Currently Amended) The process as claimed in claim 1, ~~characterized in that~~ wherein the Particle-Froude number in the gas supply tube (26) lies between 1.15 and 20.

3. (Currently Amended) The process as claimed in claim 1 or 2, ~~characterized in that~~ wherein the Particle-Froude number in the annular fluidized bed (27) lies between 0.115 and 1.15.

4. (Currently Amended) The process as claimed in ~~any of the preceding claims~~, ~~characterized in that~~ claim 1, wherein the Particle-Froude number in the mixing chamber (20) lies between 0.37 and 3.7.

5. (Currently Amended) The process as claimed in ~~any of the preceding claims~~, ~~characterized in that~~ claim 1, wherein the filling level of solids in the reactor (25) is adjusted such that the annular fluidized bed (27) extends beyond the upper orifice end of the gas supply tube (26) and that solids are constantly introduced into the first gas or gas mixture and entrained by the gas stream to the mixing chamber (20) located above the orifice region of the gas supply tube (26).

6. (Currently Amended) The process as claimed in ~~any of the preceding claims~~, ~~characterized in that~~ claim 1, wherein as starting material aluminum hydroxide with a grain size of less than 100 µm is supplied.

7. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ preheated gas containing oxygen is supplied to the reactor (25) through the gas supply tube (26).

8. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ gaseous and/or liquid fuel is introduced into the reactor (25) through the gas supply tube (26), the fuel preferably being supplied in the vicinity of the outlet opening of the gas supply tube (26).

9. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ gaseous fuel and/or air is introduced into the lower region of the annular fluidized bed (27) of the reactor (25).

10. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ the pressure in the reactor (25) lies between 0.8 and 10 bar.

11. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ before the heat treatment in at least one preheating stage (A, B), comprising a heat exchanger (3, 4) and a downstream separator (6, 18), the solids are suspended, dried, preheated and/or partly calcined.

12. (Currently Amended) The process as claimed in claim 11, ~~characterized in that wherein~~ an annular-fluidized-bed heat exchanger (70, 71) with a stationary fluidized bed (72) and a mixing chamber (73) is used as heat exchanger.

13. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ cooling the reactor (25) and/or an annular-fluidized-bed heat exchanger (70, 71) is effected by injecting water into the annular fluidized bed (27, 72).

14. (Currently Amended) The process as claimed in ~~any of claims 11 to 13, characterized in that claim 11, wherein~~ after the heat treatment 0 to 100 % of the product entrained by the exhaust gas of the reactor (25) are discharged via a separator (34) into a preferably fluidizing-gas-operated mixing vessel (34), and a product mixture is generated with partly calcined solids.

15. (Currently Amended) The process as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ the product or product mixture is supplied to a cooling system (40) which in particular consists of an arrangement of a plurality of cooling stages (D, E, F, G, H) connected in series.

16. (Currently Amended) The process as claimed in claim 15, ~~characterized in that wherein~~ the gas heated in the cooling stage (D, E, F, G, H) is supplied to an upstream cooling stage (D, E, F, G), a preheating stage (A, B) and/or the reactor (25).

17. (Currently Amended) A plant for producing metal oxide from metal compounds, such as metal hydroxide or metal carbonate, in particular for performing a process as claimed in ~~any of claims 1 to 16, claim 1~~ comprising a reactor (25) constituting a fluidized-bed reactor, in which the metal compound is heated by combustion of fuel and metal oxide is generated, ~~characterized in that wherein~~ the reactor (25) has a gas supply system which is formed such that gas flowing through the gas supply system entrains solids from a stationary annular fluidized bed (27), which at least partly surrounds the gas supply system, into the mixing chamber (20).

18. (Currently Amended) The plant as claimed in claim 17, ~~characterized in that wherein~~ the gas supply system has a gas supply tube (26) which in the lower region of the reactor (25) extends substantially vertically upwards into the mixing chamber (20) of the reactor (25), the gas supply tube (26) being surrounded by a chamber which at least partly annularly extends around the gas supply tube (26) and in which the stationary annular fluidized bed (27) is formed.

19. (Currently Amended) The plant as claimed in claim 18, ~~characterized in that wherein~~ the gas supply tube (26) is arranged approximately centrally, based on the cross-sectional area of the reactor (25).

20. (Currently Amended) The plant as claimed in ~~claim 17, any of claims 17 to 19, characterized in that wherein~~ a separator (34) for separating solids is provided downstream of the reactor (25), and that the separator (34) has a solids return conduit (15a) leading to the annular fluidized bed (27) of the reactor (25) and a solids conduit (15) leading to a mixing vessel (14).

21. (Currently Amended) The plant as claimed in ~~any of claims 17 to 20, characterized in that claim 17, wherein~~ in the annular chamber of the reactor (25) a gas distributor (29) is provided, which divides the annular chamber into an upper annular fluidized bed (27) and a lower gas distributor chamber (24), and that the gas distributor chamber (24) is connected with a supply conduit (21) for fluidizing gas.

22. (Currently Amended) The plant as claimed in ~~any of claims 17 to 21, characterized in that claim 17, wherein~~ the reactor (25) has a supply conduit for gaseous

and/or liquid fuel, which leads to the gas supply system, and/or a supply conduit (21) for gaseous, liquid and/or solid fuel, which leads to the annular chamber.

23. (Currently Amended) The plant as claimed in claim 22, ~~characterized in that wherein~~ in the gas supply system, in particular in the gas supply tube (26), a lance (30) is arranged for supplying gaseous and/or liquid fuel, which lance extends into the region of the outlet opening of the gas supply system, in particular the gas supply tube (26).

24. (Currently Amended) The plant as claimed in ~~any of claims 17 to 23~~, ~~characterized in claim 17, wherein~~ that an annular-fluidized-bed heating stage (70, 71) with a chamber for a stationary annular fluidized bed (72) and a mixing chamber (73) is provided as preheating stage (A, B).

25. (Currently Amended) The plant as claimed in ~~any of claims 17 to 24~~, ~~characterized in that claim 17, wherein~~ downstream of the reactor (25) a preferably fluidizing-gas-operated mixing vessel (34) is provided for mixing the product with partly calcined solids to obtain a product mixture.

26. (Currently Amended) The plant as claimed in ~~any of claims 17 to 25~~, ~~characterized in claim 17, wherein~~ that a cooling system (40) for the product or product mixture has a fluidized-bed cooler (37) with at least one vertical weir (56, 57), before which the product or product mixture forms a fluidized bed.